10. The system as recited in claim **9**, wherein the light engine includes a plurality of scanning mirrors configured to receive light at appropriate angles and positions from the plurality of exit points and scan the light to a plurality of layered waveguides that include film layers recorded with holographic or diffractive gratings, wherein the foveal and peripheral projectors are implemented by respective foveal and peripheral waveguides of the plurality of layered waveguides.

11. The system as recited in claim **10**, wherein the foveal and peripheral waveguides include pupil expansion gratings configured to expand the light received from the scanning mirrors and direct the light to the foveal and peripheral projectors, wherein the foveal and peripheral waveguides are configured to emit the expanded light from the foveal projectors.

12. The system as recited in claim **2**, wherein the light engine further comprises focusing elements for each projector, wherein the focusing elements are configured to focus the light beams emitted by the projectors at focus surfaces in front of the holographic combiner so that the light beams are substantially collimated when reflected to the eye box points by the holographic combiner.

13. The system as recited in claim **12**, wherein ideal focus surfaces are different for different eye box points, and wherein the light engine is configured to reduce light beam diameter at different projection angles to compensate for errors between the focus surfaces and the ideal focus surfaces, wherein reducing diameter of a light beam increases the F-number thus increasing the depth of focus of the light beam.

14. The system as recited in claim **12**, wherein the focusing elements include holographic lenses.

15. The system as recited in claim **1**, wherein the system further includes a gaze tracking component configured to track position of a subject's eye, wherein the controller is configured to selectively activate and modulate particular ones of the plurality of light sources to selectively illuminate particular ones of the plurality of eye box points.

16. The system as recited in claim **1**, wherein the scanning mirrors include 2D scanning microelectromechanical systems (MEMS) mirrors.

17. A method, comprising:

emitting, by a laser array projector comprising a plurality of light sources, light beams to a plurality of entrance holograms of a distribution waveguide under control of a controller;

guiding, by the distribution waveguide, the light beams to respective ones of a plurality of exit holograms of the distribution waveguide;

emitting, at the exit holograms, the light beams to a plurality of scanning mirrors scanning, by the scanning mirrors, the light beams to layered waveguides with pupil expansion;

expanding, by pupil expansion gratings of the layered waveguides, the light beams;

projecting, by the layered waveguides, the expanded light beams from respective ones of a plurality of projection points;

focusing, by focusing elements, the projected light beams in front of a holographic combiner; and

redirecting, by a plurality of point-to-point holograms of the holographic combiner, the light beams to respective ones of a plurality of eye box points.

18. The method as recited in claim **17**, wherein the plurality of eye box points includes foveal and peripheral eye box points, and wherein the plurality of projection points includes:

two or more foveal projectors configured to project wide diameter light beams over a small field of view, wherein foveal light beams are redirected by respective point-to-point holograms to illuminate foveal eye box points; and

two or more peripheral projectors configured to project narrow diameter light beams over a wide field of view, wherein peripheral light beams are redirected by respective point-to-point holograms to illuminate peripheral eye box points;

wherein the diameter of the foveal light beams is 4 mm or greater when exiting the foveal projectors, wherein the diameter of the foveal light beams is 2.3 mm or less at the foveal eye box points, and wherein the diameter of the peripheral light beams is 0.5 mm or less at the peripheral eye box points.

19. The method as recited in claim **18**, further comprising selectively activating and modulating, by the controller, particular ones of the plurality of light sources to project light from different ones of the foveal and peripheral projectors.

20. The method as recited in claim **17**, wherein the plurality of eye box points includes foveal and peripheral eye box points, wherein the plurality of projection points includes four foveal projectors configured to project wide diameter light beams that are redirected by respective point-to-point holograms to illuminate foveal eye box points and four peripheral projectors configured to project narrow diameter light beams that are redirected by respective point-to-point holograms to illuminate peripheral eye box points.

21. The method as recited in claim **17**, wherein the plurality of light sources include red, green, and blue edge emitting lasers, wherein each peripheral projector is illuminated by one red, one green, and one blue laser, and wherein each foveal projector is illuminated by four red, four green, and four blue lasers.

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